We claim:

1. A method of improving x-ray lithography in the sub 100nm range to create high quality semiconductor devices, for use in the manufacturing of commercial and military semiconductor devices used in phased array radar, missile seeking devices, direct broadcast satellite television receivers, wide band wireless systems, global positioning satellite receivers and cellular telephones, and other equipment said method comprising the steps of:

providing for the use and development of horizontal beams from a synchrotron or point source of x-ray beams;

preparing of submicrometer, transverse horizontal and vertical stepper stages and frames;

providing a stepper base frame for the proper housing and mating of the x-ray beam;

minimizing the effects of temperature and airflow control by means of an environmental chamber;

transporting, handling and prealigning wafers and other similar items for tight process control;

improving the control and sensing of positional accuracy through the use of differential variable reluctance transducers;

controlling the continuous gap and all six degrees of freedom of the wafer being treated with a multiple variable stage control;

incorporating alignment systems using unambiguous targets to provide data to align one level to the next;

using beam transport, shaping or shaping devices to include x-ray point sources;

using an inline collimator or concentrator for collimating or concentrating the x-ray beams; and

imaging the mask pattern at the precise moment for optimum effectiveness.

2. A method of improving x-ray lithography in the sub 100nm range to create high quality semiconductor devices, according to claim 1, wherein:

said using and developing of horizontal beams from a synchrotron or point source of x-ray beams step comprises the use of a beamline in parallel with the z axis.

3. A method of improving x-ray lithography in the sub 100nm range to create high quality semiconductor devices, according to claim 1, wherein:

said preparing of submicrometer, transverse horizontal and vertical stepper stages and frames step comprises providing a light weight, honeycomb structure;

said preparing of submicrometer, transverse horizontal and vertical stepper stages and frames step further comprises providing a air or gaseous bearing;

said preparing of submicrometer, transverse horizontal and vertical stepper stages and frames step further comprises providing vacuum clamping and mating surfaces;

said preparing of submicrometer, transverse horizontal and vertical stepper stages and frames step further comprises providing active weight compensation;

said preparing of submicrometer, transverse horizontal and vertical stepper stages and frames step further comprises linear actuators; and

said preparing of submicrometer, transverse horizontal and vertical stepper stages and frames step further

comprises a fine alignment flexure stage of transverse horizontal and vertical nanometer stages.

4. A method of improving x-ray lithography in the sub 100nm range to create high quality semiconductor devices, according to claim 3, wherein:

said providing a light weight, honeycomb structure step comprises the use of at least one composite material.

5. A method of improving x-ray lithography in the sub 100nm range to create high quality semiconductor devices, according to claim 1, wherein:

said providing a stepper base frame for the proper housing and mating of the x-ray beam step comprises providing beam alignment and vibration insulation techniques when connecting the stationary x-ray synchrotron or point source.

6. A method of improving x-ray lithography in the sub 100nm range to create high quality semiconductor devices, according to claim 1, wherein:

said minimizing the effects of temperature and airflow control by means of an environmental chamber step comprises controlling the temperature and humidity; and

said minimizing the effects of temperature and airflow control by means of an environmental chamber step further comprises minimizing particle molecular contamination.

7. A method of improving x-ray lithography in the sub 100nm range to create high quality semiconductor devices, according to claim 1, wherein:

said transporting handling and prealigning wafers and other similar items for tight process control step comprises using a cluster like environment in the coating, pre-baking, aligning and exposing, post baking and quality control processes.

8. A method of improving x-ray lithography in the sub 100nm range to create high quality semiconductor devices, according to claim 1, wherein:

said improving the control and sensing of positional accuracy through the use of differential variable reluctance transducers step comprises providing positional feedback of the six degrees of freedom alignment stage.

9. A method of improving x-ray lithography in the sub 100nm range to create high quality semiconductor devices, according to claim 1, wherein;

said controlling the continuous gap and all six degrees of freedom of the wafer being treated with a multiple variable stage control step comprises using a device having a cross coupled gantry design.

10. A method of improving x-ray lithography in the sub 100nm range to create high quality semiconductor devices, according to claim 1, wherein:

said incorporating alignment systems using unambiguous targets to provide data to align one level to the next level step comprises using multiple bright field optical microscopes in order to provide x, y and z, magnification and rotational data; and

said incorporating alignment systems using unambiguous targets to provide data to align one level to the next level step further comprises using an additional imaging broad band interferometer alignment system for providing precise alignment of wafer levels and gap controls during x-ray exposure and imaging.